DOCUMENT RESUME

ED 058 705 EC 041 287

AUTHOR	Gottlieb, Jay; And Others
TITLE	A Preliminary Evaluation of the Academic Achievement and Social Adjustment of EMRs in a Nongraded School Placement. Studies in Learning Potential, Volume 2, Number 23.
INSTITUTION	Research Inst. for Educational Problems, Cambridge, Mass.
SPONS AGENCY	Bureau of Education for the Handicapped (DHEW/OE), Washington, D.C.
PUB DATE	71
GRANT	OEG-0-8-080506-4597(607)
NOTE	31p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Academic Achievement; *Educable Mentally Handicapped; Elementary School Students; *Exceptional Child Research; Mentally Handicapped; Nongraded Classes; Peer Acceptance; *Social Adjustment; Special Classes; Student Attitudes; *Student Placement

ABSTRACT

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ED 058705

STUDIES IN LEARNING POTENTIAL

A PRELIMINARY EVALUATION OF THE ACADEMIC ACHIEVEMENT AND SOCIAL ADJUSTMENT OF EMRS IN A NONGRADED SCHOOL PLACEMENT

MAR 13 1972

by

Jay Gottlieb, Leah Hutten and Milton Budoff

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Volume 2, Number 23
1971

Research Institute For Educational Problems
12 Maple Avenue Cambridge, Massachusetts

EC 041887E

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A PRELIMINARY EVALUATION OF THE ACADEMIC ACHIEVEMENT AND SOCIAL ADJUSTMENT OF EMRS IN A NONGRADED SCHOOL PLACEMENT

Jay Gottlieb, Leah Hutten and Milton Budoff[1]

Research Institute for Educational Problems

The efficacy of special classes for the educable mentally retarded (EMR) has been investigated periodically for almost 40 years beginning with Bennett's (1932) study of the relative merits of the regular and special grades. Basically, a compendium of this research revealed two major findings: 1) EMRs in the regular grades are superior in academic achievement to their special class counterparts, and 2) the social adjustment of EMRs in the special class surpasses that of EMRs who remain in the regular grades.

Academic achievement is a relatively straightforward concept with general consensus as to its meaning. Social adjustment, on the other hand, is an elusive concept with great variability in the interpretation of its structure. Consequently, numerous well constructed tests exist to assess academic achievement and few, if any, equally well standardized tests appear within the domain of social adjustment. This paucity of validated instruments has provided the impetus for the development of numerous makeshift ones. The instruments most often employed by the "efficacy" investigators were sociograms and teacher rating scales.

In view of the fact that social adjustment remains such a nebulous concept with few reliable scales available to measure

it, of what validity are the findings that EMRs in the special class exhibit better social adjustment than their peers in the regular grades? Is it sufficient to define social adjustment as the outcome of a sociometric and/or teacher evaluation? Equally important, are we willing to allow the two-factor model of educational placement - regular and special classes - to exhaust the range of possibilities for the education of EMRs?

This preliminary report confronts three related issues regarding the education of children psychometrically defined as educable mentally retarded: 1) the evaluation of variables hypothesized to relate to social adjustment, 2) the relationship of these social adjustment variables to two types of educational placement, and 3) the relationship of Learning Potential (LP) status to performance on social and academic variables in the two educational placement situations.

Evaluation of variables hypothesized to relate to social adjustment.

The first purpose of this evaluation was to identify variables which represented desirable outcomes of an educational intervention. Such variables were included for consideration if they fulfilled at least one of the following two criteria: 1) the variable was either theoretically or empirically related to social adjustment; 2) it was theoretically and/or empirically related to academic achievement. The second criterion was included since it is difficult to divorce academic achievement from social adjustment. The evidence strongly suggests that the two are mutually interdependent. Two

approaches to assessing social adjustment were undertaken. The first of these involved having others rate the retarded child regarding the degree to which they wanted him as a friend. The underlying assumption of this approach was that retarded children who were wanted as friends would be better adjusted than those children not wanted as friends. The second approach involved questioning the retardate regarding how he felt about himself. Did the retardate himself feel that he was functioning well? The specific variables included for consideration are presented elsewhere in this paper.

Social adjustment and educational placement.

Historically, the evaluation of retardates' educational progress has proceeded on several different levels. The major investment of time and money into this evaluative paradigm has focused on a comparison of the relative social and academic adjustment of EMRs in special and regular classes. In these studies, EMRs who were placed in special classes were completely segregated in their self-contained classrooms, while those remaining in the regular grades were never identified as being retarded until the onset of the evaluation. Basically, the results of these investigators have cast serious doubt as to the necessity for special classes. In none of the "efficacy" studies was the special class found to be clearly superior to the regular grades. A more detailed review of the efficacy literature has appeared elsewhere (Guskin & Spicker, 1968) and, therefore it is being omitted from this report.

The second type of evaluation focused upon a comparison of retarded children who remained in the regular classes with normal children in the same classes. The dependent measures employed in this series of studies (Johnson, 1950; Miller, 1956) were sociometric indices of social acceptance. The results of these reports unequivocally indicate that retarded children are not so well accepted as their average IQ peers. The major point of contention has been the correct manner to interpret the data. Are EMRs actively rejected by their nonEMR peers, or are they merely not accepted by them?

A comparison of normals and EMRs who were partially integrated into selected non-academic regular classes comprised the third approach in this series of comparative studies. This line of experimentation has found that integrated EMRs are still not as well accepted as their nonEMR peers (Lapp, 1956; Rucker, et al., 1969). However, the interpretation of this latter data suggests that EMRs are non-accepted as opposed to being overtly rejected. Special class EMRs, on the other hand, are viewed as being overtly rejected (Thurstone, 1959).

The present effort represents yet another attempt to evaluate the educational growth of educable retardates. However, unlike the previous attempts which have concentrated their efforts in the traditional graded elementary schools, this investigation examined the achievement and adjustment of EMRs who were attending a nongraded school. It was hypothesized that the nongraded school placement would benefit the retardate both academically and socially.

Several reasons exist to suggest that this might be the case. First, in a nongraded school, it is a common occurrence for certain nonEMRs to be performing, in one or more academic areas, at lower levels than would be expected on a chronological age basis. To illustrate, a child may attend a fifth year reading but a third grade arithmetic class. In such a situation, the children become cognizant that specific subject area deficiencies exist in children who are not necessarily retarded, and that appropriate remedial aid is necessary. Frequent experience with children who are deficient in specific subject areas may reduce the stigma that is associated with a more encompassing academic failure which oftentimes results in special class placement.

A second reason to expect psychometrically defined EMRs to be more accepted by their regular school peers is the fact that retardates in a nongraded school are being exposed to many more normal children than would be the case in most graded elementary schools. This exposure occurs in subject areas where the retardate is functioning at approximately the same level as other group members, and not under circumstances where his presence accentuates his intellectual limitations. Since social contact has been found to be a factor related to more favorable attitudes (Jaffe, 1966), the social status of integrated EMRs should be reflected accordingly.

The logical consequence of the improved social acceptance of EMRs is an accompanying reduction of "social threat." Social threat refers to a class of social stimuli that tend to elicit anxious expectations that others will inflict harm. Unlike

situations where the EMR is threatened, by implication by his peers, teachers, or parents, his social acceptability in some school activities may reduce his need to engage in defensive behaviors that were meant to protect himself from possible harm but may have alienating consequence. He may then channel more energy into academic inputs. This improved adjustment-academic performance cycle thus has the potential to induce a self-generating spiral of achievement oriented performance much as the social rejection-poor academic performance cycle induces the defensive, negative and avoidant behaviors characteristic of chronic school failures who have lost heart with academic materials. Improved acceptance should result in improved performance, which in turn should promote greater social acceptance.

Relation of Learning Potential to Social and Educational Performance.

A question of primary concern to the educator is the degree to which a child can profit from the materials presented in the classroom. Barring those whose behavior is difficult to manage, the ostensible reason children are referred for testing for possible special class placement is their failure to progress academically. Most children so referred come from economically poor backgrounds. Their experiences prior to the start of school do not prepare them for the types of demands made by middle class oriented curricula and, consequently, they fail to learn satisfactorily. The traditional IQ scores measure the extent to which these children have acquired the skills and information necessary for success in the middle class biased curricula. The low IQ score

predicts the child's probable failure to succeed with academic subject matters. The discriminatory nature of this testing process has been decried frequently in recent years. However, the IQ score remains the major criterion for placement in special classes for the retarded.

Learning Potential assessment evaluates the child's ability to work with minimally verbal reasoning problems, and to profit from training on principles relevant to their solution in a pretest-train-posttest paradigm. Ability as intelligence is defined by the child's ability to profit from the training experience. The low verbal demand of the problems allows them to be perceived as non-school-related puzzles. This tends to engage the child's interest and minimize his sense of incompetence. The child's repeated contact with the game-like materials reduces the strangeness of the problem contents and the negative effect associated with a test situation. The opportunity to learn how to solve the problems allows the child the opportunity to develop and demonstrate increasing competence over successive administrations.

Three patterns of response to this test-train-test assessment paradigm occur: some psychometrically defined EMR Ss perform at the level of their peers prior to training (high scorers); others markedly improve their performance following training (gainers); while others do not show marked increments in score following training (nongainers).

Budoff and his colleagues (1967, 1969) have demonstrated marked differences on nonverbal psychometric, learning, and

motivational abilities among the three Learning Potential groups. For example, Budoff, Meskin and Harrison (1961) reported that LP status was highly correlated with improved understanding of electricity on a nonverbal elementary science unit *(Budoff, et al., 1970). In that study, LP differentiated among special and regular class students while IQ scores did not. Also, the more able (LP) students (high scorers and gainers) saw themselves as less neurotic and anxious than the low able (nongainer) Ss (Harrison and Budoff, 1970).

The implication of the LP assessment approach is that it demonstrates that EMRs, although a homogeneous group with respect to their IQ scores, are not homogeneous with respect to their ability to profit from instruction. If psychometrically defined educable retarded children differ in their ability to profit from experiences, it may be hypothesized that the low able nongainer child who does not improve his performance, would benefit most from special class placement where academic learnings are oftentimes subservient to non-academic material (Fine, 1967). Such placement might tend to minimize the fear of failure that is said to be a characteristic of retarded children (Moss, 1958). The more able (LP) Ss (high scorers and gainers) who are psychometrically defined as EMRs benefit most from placement in general education classes, especially those classes in which the curriculum is tailored to the needs of the particular child rather than to a particular grade level.

To summarize, the present investigation evaluated the

effectiveness of a nongraded elementary school for psychometrically defined EMR children in relation to their Learning Potential status and selected academic and non-academic variables.'

METHOD

Subjects

For purposes of this initial investigation, ten children from the Hamilton School, a nongraded elementary school in suburban Massachusetts, who were officially identified as being EMR and were integrated into the regular academic routine on a full-time basis, were the subjects for the experimental group. Three children were eliminated from the experimental group because matched control subjects could not be located. Seven children who were matched for IQ, sex and social class and who were enrolled in self-contained special classes in various suburban schools were designated as matched controls.

Assessment battery

Academic achievement - The Wide Range Achievement Test (WRAT) was used to obtain information on the subjects' academic achievement. The WRAT, which has subtests for reading and arithmetic, was standardized on approximately 5,800 subjects between the ages of 5-0 to adult. Standard scores and grade equivalent scores can be obtained from the conversion tables supplied in the manual. The WRAT was found to be stable as well as internally reliable. In addition, it correlates quite well with such external criteria as

teachers' ratings of the child's academic achievement, and with the WISC.

Self concept - perhaps the most often investigated personality variable has been the self concept. Basically, self attitudes develop through social interaction and result in the child's distinguishing himself from others. As such, it is theorized to be one of the major, if not the nuclear, construct which motivates the organism. Not surprisingly, self attitudes have been examined in relation to school achievement. Briefly, this line of research has revealed that there is a positive correlation between self attitudes and achievement. In other words, children who have high self concepts are likely to be doing well in school, and conversely, children with poor self concepts are likely to be performing poorly. It is important to bear in mind that the fact that self concept and achievement are correlated does not imply that there is a cause-effect relationship between the two. However, the work of Videbeck (1960) suggests that self concept operates in a causal manner to influence achievement.

The self concept index used in this investigation was the Illinois Index of Self Derogation (IISD), an instrument developed by Meyerowitz (1962). Previous research with this instrument (Meyerowitz, 1962; 1967) revealed that it discriminated between special and regular class EMRs, with the former derogating themselves to a greater extent.

Locus of control - One variable which has received attention in the research literature during the past decade has been locus of control. Developed by Bialer in 1960, the scale used to measure

this variable is a 23-item questionnaire to which the child must either agree or disagree that each item accurately describes himself. The construct itself attempts to delineate two basic modes of personality development: the internally controlled individual, who sees himself as controlling the reinforcements accruing to him, and the externally controlled individual who believes that he has little control over his own fate and that reinforcements to him are delivered at the pleasure of others. Needless to say, the former personality structure represents the desired mode of functioning.

School morale - Children who have had positive reinforcement from either their teachers or peers, or both, may be expected to acquire more favorable attitudes toward school than children who have learned to associate the school milieu with negative experiences. Since the philosophy of the nongraded school is such that the organization of the school provides individual instruction which is designed to maximize the opportunities for children to succeed, we may expect that children participating in this program will experience more success than children enrolled in the more traditional school. A 42-item school morale inventory was employed to assess attitudes toward school.

Social acceptability - One of the most frequently used techniques for assessing social adjustment has been to administer sociometric questionnaires in order to determine the extent to which certain children are accepted by their peers. The underlying assumption of a sociometric evaluation is that it presents a

valid reflection of interpersonal behavior. It is further assumed that when the EMR is engaging in behaviors that are already acceptable to normals he will have little need to manifest other behaviors designed to secure the normal's affection - behaviors which most often result in the loss of social esteem. This state of affairs, in turn, permits the retardates to invest more energy into academic inputs than social ones.

Learning potential - This instrument is administered in a test-coach-retest paradigm. The pretest, Ravens Coloured Matrices (Ravens, 1938) is administered in small groups. The task is a series of pictorial non-verbal problems, such as pattern completions and 2 x 2 matrix puzzles. In each puzzle, one piece of the total picture is missing. The subject is required to choose from among four alternatives the piece which best completes the pattern. Following the pretest, the subject receives two individual training sessions in which he is instructed in the correct manner to approach such problems. Each sample pattern in the training session is analyzed into its simplest components and shown to the subject. Following the training sessions the subject is posttested.

The pretest score is an indication of the subject's initial ability on a non-verbal reasoning task. Subjects whose pretest performance is above a cut-off norm for their age group (norms based upon an IQ of 90) are called high scorers and are neither trained or retested.

PROCEDURE

The Wide Range Achievement Test was administered individually to each subject. All subjects, with one exception, were administered Level I of the WRAT. The remaining subject, whose academic performance was sufficiently high, was given the Level II version of the reading section of the test.

The various instruments which measured the social-psychological adjustment of the subjects to their school placements (i.e., locus of control, school morale, IISD) were administered to small groups. Most often, three or four children were tested together. The experimenter read each question item to the subjects and they had to respond by circling the appropriate response - yes or no - on their answer sheets. Care was taken to ensure that all subjects understood every question. Items were repeated and explained to any child who so requested.

The learning potential instrument was administered in a series of sessions. The first session (pretest) was a group administration of the Ravens Coloured and Standard Progressive Matrices, a non-verbal pictorial reasoning task. The task required the subject to choose from among six or eight alternatives a piece that most correctly completes a puzzle. The next sessions (one or two sessions depending on how quickly the individual subject mastered the task) were spent coaching the children on how to develop a systematic strategy for solving matrix puzzles. This usually involved having each child draw each matrix. In the

posttest session the matrices were readministered to small groups. No time limit was imposed upon the subjects during either testing session.

RESULTS

For purposes of data analysis, scores for each experimental group subject were compared with only one of his matched controls. A control subject who was most comparable to his experimental counterpart was used for this purpose. Table 1 summarized the demographic characteristics of the experimental and control group children.

Unless otherwise indicated, all statistical analyses employed in this section were *t* tests for matched samples.

Spring, 1970 reading scores for the experimental and control groups were compared, with the resulting statistical analysis indicating no significant differences in the mean scores of the two groups ($t = .68$, $df = 6$). However, as can be seen in Table 2, which summarizes the data for the variables under consideration, experimental group subjects had a mean reading score of 3.35 while the control subjects obtained a 2.77 mean reading level. Unfortunately, no Fall, 1969 reading scores were available on the control group to enable a comparison of reading level increments between the groups.

Comparable findings also were obtained on the arithmetic subtests of the WRAT. Although no statistically significant differences between the groups were obtained ($t = 1.24$, $df = 6$), here, too, the integrated EMRs performed better than the segregated

ones. Table 2 indicates that the mean arithmetic scores for the experimental group was 3.04 while the controls performed, on the average at the mid-second grade level ($\bar{X}$ = 2.59). Again, the absence of pretest data precluded a comparison of gain scores.

Thus, in the academic areas, although there were no statistically significant differences between the integrated and segregated EMRs, the direction of the difference was in favor of the former.

Self derogation scores were calculated for both groups of subjects. An analysis of these scores revealed virtually no differences between the experimental and control children. Segregated subjects reported a mean derogation score of 5.56, while integrated EMRs obtained a mean derogation score of 5.70. Taken in the context of a maximum possible range of 0-28, both groups of children were equally self-aggrandizing (the lower the score, the less the self-derogation).

The locus of control (LC) questionnaire was administered to the entire experimental group but to only three of the controls. Because of the number of subjects on whom the LC was administered, an analysis of their average difference scores was not undertaken. However, simple mean scores were computed for each group. The means of 13.14 and 12.67 for the experimental and control groups respectively (items scores in internal direction), indicate that both groups are equally likely to view themselves as controlling their own reinforcements.

School morale assessment of the experimental and control

group children was analyzed and the results strongly favored the former as is shown in Table 2. A more reliable and meaningful evaluation of the relation between attitudes toward school and educational placement also was undertaken. This involved comparing children within a single school rather than securing control subjects from other schools. This is a more meaningful procedure because there are many subtle factors within any one school which can influence children's attitudes, factors which are hard to pinpoint and even harder to control. Teacher morale, the nature of physical facilities and amount of educational materials all may covertly influence the child's school experience. Undoubtedly these factors vary among schools and more so among school systems.

In the present evaluation of the Hamilton School, the school morale inventory was administered to three experimenter-defined groups: a group of 15 normal children, a second group of 9 integrated EMRs, and a third group of 8 segregated EMRs who remain enrolled in the self-contained classroom. All children were attending the same school.

Table 3 summarizes this data and reveals that the integrated EMRs and the normals do not differ statistically in their school-related attitudes. Both groups view their school in favorable terms. Segregated EMRs, on the other hand, are rather apathetic in their attitudes and are significantly less tolerant of school than either of the other two groups ($F = 9.34$, $df = 2/29$, $p < .01$). Thus, the nongraded placement was most successful in promoting favorable attitudes toward school among retarded children who were

educated in this milieu.

The last phase of the data presented in this report concerns the social acceptance of the EMRs. This analysis is based upon the responses of 40 normal subjects - 20 primary level and 20 intermediate level children equally divided between the sexes. Each subject was read a list containing the names of both normal and retarded children in his unit (primary or intermediate). The first time the list was read, the subjects were asked to state whether they knew each child named. The list was then read a second time but now included only those names whom the subjects indicated they knew. For each name known, the subjects were asked whether they wanted that person as a "friend," whether the person was just "alright" or whether they "wouldn't like" the person. An analysis of this data indicated that there were no significant differences in the number of times integrated or segregated EMRs were chosen as "friends" but that the latter were rejected more than the former by nonEMR male judges. Female raters did not differentiate in the degree to which they rejected integrated versus segregated retardates. A description of this data appears in Table 4.

DISCUSSION

Analysis of the data reported herein, when taken as a whole, tend to support the conclusion that a nongraded school is a preferable model for the placement of educable mentally retarded children. Although inspection of each variable independently did

not reveal significant differences between the nongraded subjects and their controls, the direction of the difference favored the experimental group on virtually every measure. Although the small sample size necessitates a conservative interpretation regarding the generalizability of the data, nevertheless, within the Hamilton School nongrading appears to have had a salutary effect on the EMRs.

What was most convincingly demonstrated was that integrated EMRs express more favorable attitudes toward school than their segregated peers. Although not included in the present report, these results have recently been cross validated with identical results. Segregated EMRs express less favorable attitudes than normals. As issue which this report did not address was the correlates of improved school-related attitudes. It may be expected that children who view their school in a favorable light will have higher attendance rates and cause less management problems for their teachers than children who are not favorably disposed toward school.

It may be tempting to suggest that one reason the normal children, as well as the integrated EMRs, have favorable attitudes toward school was the fact that the Hamilton School enjoys a relatively small enrollment. Had the number of children attending the school been substantially greater, their attitudes might have been depressed. This is not the case. Our investigations of other schools having much larger enrollments than Hamilton have produced similar data. At this stage in our investigation, it appears that children's attitudes toward school bear little relation to its physical size.

Although all information elicited from the EMR subjects support the interpretation that nongrading is desirable, the sociometric data portrays a different picture. Normal children are not more accepting of integrated EMRs. On the contrary, nonEMR males tend to reject the integrated retardates more than the segregated ones. How does one reconcile this finding with the more usual one that the special class stigmatizes its pupils and hence results in their ultimate rejection? Probably, the most plausible rapprochement between these two seemingly contradictory viewpoints is that nonEMRs maintain a dual set of standards as to what constitutes social acceptance. Integrated EMRs who were never defined as being retarded insofar as the normal children are concerned may be perceived by the latter as "normal." As such, they (integrated EMRs) are subject to the same standards of behavior as other normal children. Failure to adhere to these standards results in rejection. Special class EMRs, on the other hand, may be perceived quite differently from their nonEMR peers. These children (EMRs) are officially defined as retardates by the school authorities, and undoubtedly this designation is shared by the nonEMR children. Normal children may have learned that retarded people cannot be expected to perform at the same level as normals, and consequently the normals' expectations of the EMRs' capabilities shifts downward, i.e., he expects less from the EMR. Thus the integrated EMR may be rejected by nonEMRs when the latter's frame of reference relates to normal children, while the segregated EMR may be evaluated by nonEMRs from the perspective of

his being a retardate. If this is the case, any comparison of integrated versus segregated EMRs -ust bear this in mind. Is it potentially more damaging to an EMR to be rejecged as a normal child or to be tolerated by others while at the same time fulfilling the role of a retardate?

Unfortunately, there were too few subjects in the present evaluation to determine how the subjects' LP status interacted with the outcomes of the other variables. Additional study is necessary to evaluate whether children who are high on our LP criterion will profit more from an integrated educational placement than from a segregated one.

RECOMMENDATIONS FOR EDUCATIONAL PRACTICES

One means of enhancing the social acceptance of EMRs by normal children might be to introduce lessons or behavior modification techniques which would be constructed so as to increase normal children's tolerance and acceptance of others. There is presently an emphasis on educating children regarding background and culture of various minority groups, but no focus has ever been placed on the mentally retarded as such a group. Children should be cognizant that there are certain individuals in society who are not so well endowed as others but that they **are** still capable of leading a productive life and being contributing members of society.

Certain extra-curricular school activities can be arranged

so as to include both segregated, integrated, and normal children. Examples of these activities are plays, skits, carnivals, science fairs, etc. Research studies have demonstrated that when normal children are rewarded for participating with EMRs, the former's attitudes toward the latter improve. Of course, the reward must not be made so obvious that the normal child feels he is being bribed for playing with the retarded child.

CONCLUSIONS

While some questions were answered by the present evaluation, others persist. For example, is the perception of normal children affected by the fact that retardates are not identified as such? If identification does influence perceptions, what facets of EMRs' behaviors lead to their social acceptance or rejection? If curriculum modifications are to be made, at what grade level is it most desirable to incorporate these changes? Hopefully, these answers will be forthcoming.

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FOOTNOTES

[1]The authors wish to thank Muriel Lundy, Gerald Peterson, Henry Owen and the teachers of the Hamilton School for their assistance and cooperation during all phases of this evaluation.

TABLE 1

DEMOGRAPHIC CHARACTERISTICS OF EXPERIMENTAL AND CONTROL GROUP SUBJECTS

GROUP	#	SEX	CA (in months)*	IQ	LEARNING POTENTIAL STATUS**
Experiment.	1	F	101	65	NG
Control	1	F	96	67	NG
Experiment.	2	M	119	78	G
Control	2	M	112	75	HS
Experiment.	3	M	135	83	HS
Control.	3	M	132	79	NG
Experiment.	4	F	125	70	NG
Control	4	F	121	70	no LP data
Experiment.	5	M	131	88	G
Control	5	M	138	88	NG
Experiment.	6	F	147	70	NG
Control	6	F	136	81	G
Experiment.	7	F	156	67	HS
Control	7	F	150	64	no LP data

* as of 12/69

** NG=nongainer, G=gainer, HS= high scorer

TABLE 2

MEANS AND STANDARD DEVIATIONS OF RELEVANT VARIABLES

	WRAT				
	Reading	Arith.	Self-concept	LC	School morale
Exp. Mean	3.35	3.04	5.70	13.14	32.28
Exp. S.D.	1.80	.96	3.06		3.77
Control Mean	2.77	2.59	5.56	12.67	27.14
Control S.D.	1.36	.90	4.37		6.98

TABLE 3

SUMMARY OF ANALYSES FOR SCHOOL MORALE ASSESSMENT

Source	SS	df	MS	F
Between	344.63	2	172.32	9.34*
Within	534.87	29	18.44	
TOTAL	879.50	31		

	Normal Children	Integrated EMRs	Segregated EMRs
Mean	32.00	29.00	23.88
S.D.	4.08	4.55	3.48

*p < .01

TABLE 4

SUMMARY FOR ANALYSES OF SOCIOMETRIC CHOICE DATA

	Wouldn't like			Alright			Friend		
Source	df	MS	F	df	MS	F	df	MS	F
Sex of judge (A)	1	.091	NS	1	.061	NS	1	.006	NS
$error_{(b)}$	18	.227		18	.644		18	.065	
Normal/segregated EMR/ integrated EMR (B)	2	.141	4.41*	2	.011	NS	2	.106	7.57**
A x B	2	.133	4.16*	2	.168	4.00*	2	.058	4.14*
$error_{(w)}$	36	.032		36	.042		36	.014	

Means for percent of times chosen

	Nor.	Int.	Seg.	Nor.	Int.	Seg.	Nor.	Int.	Seg.
Male judges	.367	.642	.435	.440	.242	.386	.194	.117	.178
Female judges	.332	.383	.495	.387	.517	.355	.281	.100	.050

*p < .05
**p < .01

APPENDIX A

Follow-up of Ten Subjects who were Enrolled in the Integrated Program for EMR with Respect to Reading, Math and IQ Scores

Subject Number	LP	WRAT READING				WRAT MATH			
		11/68	5/69	11/69	5/70	11/68	5/69	11/69	5/70
1	ng	4.0	4.8	4.8	5.0	2.9	3.6	4.8	5.0
2	HS	2.7	2.7	2.9	3.3	2.9	3.2	3.2	3.6
3	G	1.8	2.3	2.5	311	2.9	3.6	3.2	3.6
4	G	4.6	7.5	7.2	6.9	3.8	3.9	4.7	4.2
5	HS		.8	1.2	1.2		.7	.9	1.0
6	G		1.1	1.3	1.3		.9	1.4	1.9
7	HS?		2.3	2.4	2.5	2.4	3.2	2.8	
8	NG			1.6	2.2		1.6	1.6	
9	NG			2.1	2.3		2.6	3.0	
10	G		1.5	2.2	2.5	1.6	1.9	2.1	

APPENDIX A (continued)

Subject Number	IQ			
	11/68	5/69	11/69	5/70
1			82	70
2	82	81	67	76
3	82	64	75	73
4			75	88
5				73
6			81	78
7	75	90	84	83
8				65
9			72	70
10			77	87